



Energy Efficiency in Iowa

Roya Stanley – Director
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Independence**



**What if Edison had won instead
of Watts?**



**Efficiency potential exists everywhere
that energy is used!**

- Reduces stress on overtaxed infrastructure
- Reduces dependence on imported fuels
- Increases productivity
- Reduces cost of government
- Reduces environmental impact

Energy Efficiency*



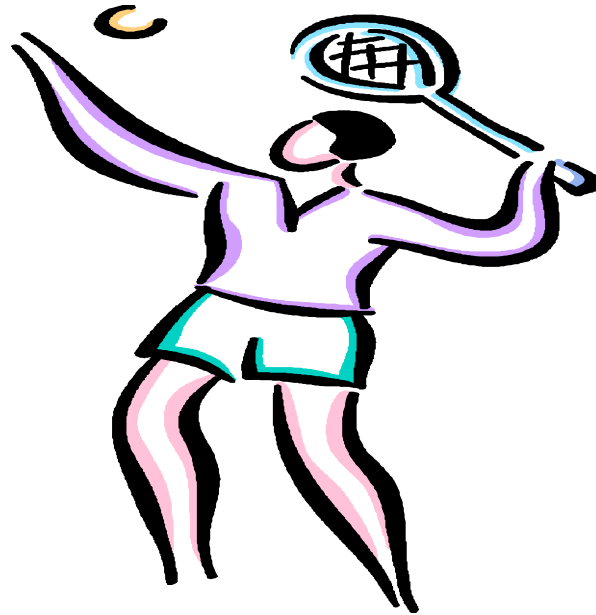
- Investing in Energy Efficiency with utilities
- Energy Efficiency Resource Standards (EERS)
- Combined Heat & Power (CHP)
- Building Energy Codes
- Transportation Policies
- Appliance & Equipment Efficiency standards
- Tax Incentives
- State Lead by Example and Research & Development

***selected policy options adapted from ACE³ 2006 Energy Efficiency Scorecard**

Measuring for Results



- Previous policy options require follow through and measurement to ensure results



Investment in Energy Efficiency



- Determine value and need for energy efficiency programs
- Administer & deliver energy efficiency and customer energy programs
 - Low-income Energy
 - Renewable Energy
- Provide monetary support
 - New programs
 - Staffing
 - Promotions/Marketing



Energy Efficiency Resource Standards (EERS)

- Mandate specific level of energy savings; generally administered by state utility commissions
- Programs such as energy efficiency savings and/or purchasing energy efficiency credits in trading system.
- Sustainable Energy Portfolio Standards (SEPS) allow for mix of resources to contribute to target; can be adjusted to state's specific resources and needs.

Combined Heat & Power (CHP)



- Cogeneration; generate power and thermal energy from single fuel source.
- Use heat recovery technology to capture heat that is otherwise wasted; use it for heating and cooling.
- Generate power onsite; decrease dependence on electric grid and reduce bulk transmission losses.
- State policy measures:
 - Streamlined interconnection rules for distributed generation;
 - Financial incentives;
 - RPS and EERs – eligible technology;
 - Output-based regulations and output-based allocations of emissions

Building Energy Codes



- 40% of total energy use/greenhouse gas emissions and 65% of total electricity consumption is used in building energy.
- Must target building efficiency prior to construction; mandatory building energy codes & follow through.
- 3 main codes developed and used:
 - Model Energy Code (MEC);
 - International Energy Conservation Code (IECC)*;
 - American Society of Heating, Refrigerating and Air-Conditioning (ASHRAE)
- Codes adopted and state level, but enforced at local level.

* IA adopted most recent version of IECC (2006)

Transportation Policies



- 28% energy use and 70% of petroleum consumption is used by the transportation sector of the U.S.
- No progress has been made on fuel economy of U.S. vehicles.
- State transportation groups, transit agencies, regional groups can work together to plan and fund mainstream transportation.
- Ideas for state policy:
 - Tailpipe emission standards,
 - Tax incentives for fuel-efficient vehicles,
 - State fleet requirements
 - Increased rail options including intermodal
 - Capitalize on telecommuting



Appliance & Equipment Efficiency Standards

- Everywhere energy-consuming appliances and equipment are used
- Extra (non-needed) energy consumed by less efficient products adds up to large amounts of wasted energy.
- Appliance efficiency standards require manufacturers to meet minimum levels.
- Save consumers money by lowering operation costs and removing inefficient products from the market.
- Federal appliance efficiency standards preempt state standards, but states need to take the lead on developing standards for products not already regulated.

Tax Incentives



Many states use tax incentives

- Increase use of technologies that provide benefits
- Lower the net cost of efficient products.
- Raise consumer awareness of eligible products; encourage retailers to more actively market products.
- Many forms of incentives:
 - Direct income tax credit;
 - Reduce sale tax on eligible products;
 - Income tax deduction opportunities

Lead By Example



- Unique opportunity to lead by example; take action to improve and become a leader in energy efficiency – drive the market
- Energy costs to run state/local government facilities can use almost 10% of a government's annual operating budget.
- Improvements can provide substantial savings, therefore freeing public money for other purposes and increasing public visibility.

Research & Development



Iowa Power Fund

- Commercialization
- Research
- Education
- Other opportunities

Energy Efficiency



Energy Performance Ratings (EPR)

- External benchmark to assess building's energy efficiency
- Scale of 1 – 100; Portfolio Manager does most of the computing!
- Help identify buildings that need improvement (or recognition)
- Criteria:
 - Evaluate energy performance for the whole building
 - Reflect actual billed energy data
 - Normalize for Operation
 - Provide a peer group comparison

Building Efficiency in Iowa



- **473.3 Energy Efficiency Goal** – Iowa more efficiently utilizes energy resources. Implement goal through development of programs that promote energy efficiency and that enhance the energy efficiency industry.
- **473.13A Energy Conservation Measures** – identify and implement energy conservation measures (identified through energy audits and engineering analyses).
- **473.19 Iowa Energy Bank Program** – DNR provides financial assistance and technical support for energy conservation measures to state agencies, political subdivisions, schools/colleges, non-profits

Building Efficiency in Iowa



Life Cycle Cost Analysis:

- The Code of Iowa requires that a life cycle cost analysis be completed for new buildings over twenty thousand square feet and for major renovations.
- Reports are submitted to the Department of Public Safety (Building Code Bureau); DNR completes technical review and approval (must be approved before contracts for the construction or renovation are let).
- FY07 reports represent annual savings of \$266,135 and life cycle cost savings of \$3,118,876. (Incremental financing for two of these reports will be done in FY 08 (amounting to annual savings of \$71,139 with life cycle cost savings of \$852,910).



Energy Conservation Measures –
construction, rehabilitation, acquisition, or
modification of an installation in a facility or
vehicle which is intended to reduce energy
consumption and/or energy costs.

Building Efficiency in Iowa



Executive Order 41 (April 22, 2005)

- Identify & implement energy efficiency measures to reduce consumption in 2010 by 15% of the levels in 2000;
- Purchase the lowest life cycle cost equipment possible. Also implement life cycle cost analysis on new construction/renovations;
- 10% of electric consumption comes from alternate energy;
- 2010: 100% of non-law enforcement, light-duty vehicles must be alternative fuel or hybrid-electric vehicles;
- Bulk diesel fuel purchased has 5% renewable content by 2007, 10% by 2007, and 20% by 2010. Operate on biodiesel blend as available.

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Lead by Example

Overcome lack of technical information and financing to deliver programs that deliver technical integrity and transparency

Building Efficiency in Iowa



Opportunity to Grow

- Strengthen EO 41:
 - Increase the required reduction in energy use;
 - Require state facilities to implement cost effective projects

- Amend Iowa Code 473.13A to mandate all state facilities:
 - have a new comprehensive round of energy evaluations;
 - Develop energy management plans based on energy evaluations that identify:
 - improvements to be made,
 - establish implementation timelines,
 - identify funding sources for implementation

Building Efficiency in Iowa



Opportunity to Lead

- Re-energize Energy Bank/SIFIC.
- Deploy marketing staff to promote energy efficiency programs. Create funding stream to pay for marketing as well as facilitation through energy savings.
- Collaborate with utilities

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New technology options

- **Lighting**

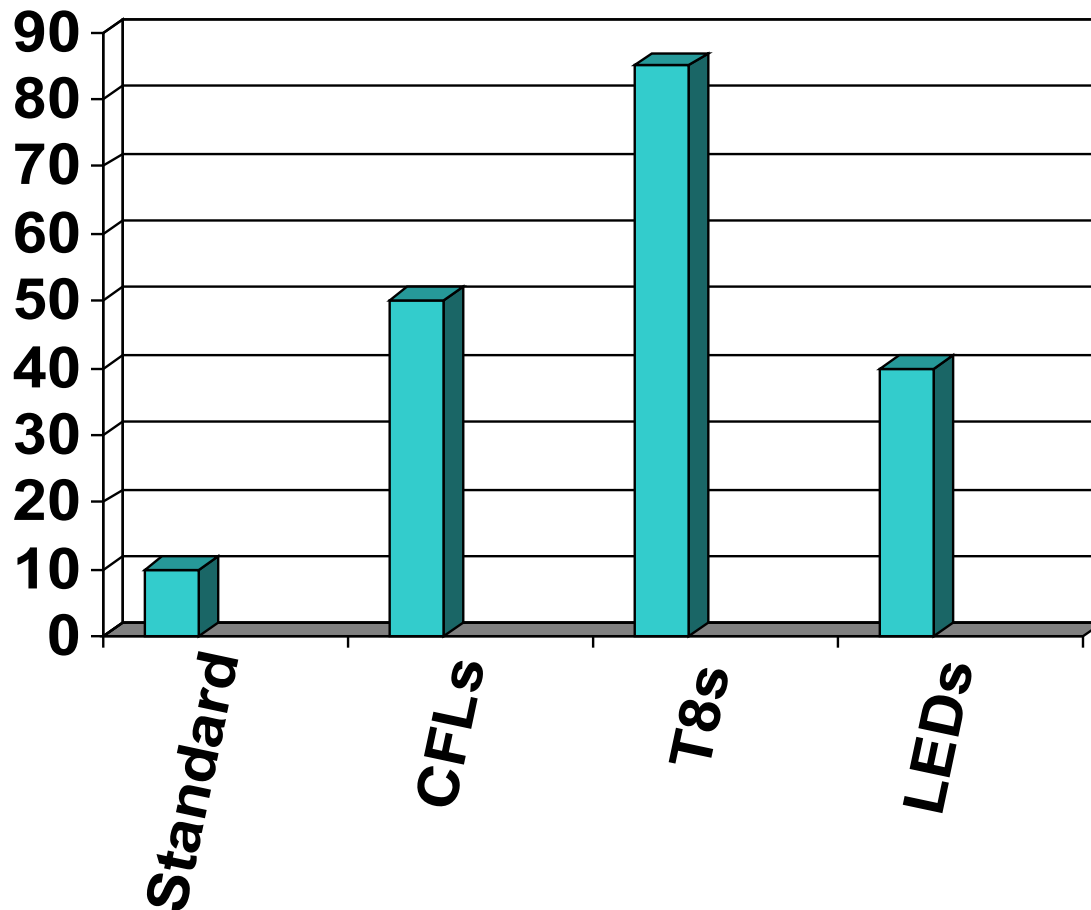
- CFLs
- T8s
- LEDs

- **Desiccant Cooling**

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What's the Difference (lumens/watt)



Building Efficiency in Iowa



New technologies to lead with

○ **Desiccant Cooling**

- Open heat driven cycle used to achieve cooling and dehumidification
- Can be combined with a conventional air conditioning system
- Reduce humidity entering – stay cool/comfortable at a slightly higher temp.
- Improve indoor air quality; decrease potential for mold growth & other pollutants
- Could reduce electricity demand by 25%

Efficiency Programs



ENERGY STAR® (EPA & DOE)

- Offices are almost 40% less energy & cost intensive than average building
- Homes are 20-30% more efficient than standard home
- Includes manufacturing & products
 - Washing machines;
 - Windows;
 - Lighting;
 - ENERGY STAR® label on over 30 various products

Efficiency Programs



ENERGY STAR® (EPA & DOE)

To receive the ENERGY STAR® plaque:

- Score 75 or higher on 1-100 EPR scale & meet current industry standards for indoor environment quality
- Licensed Professional engineer verifies:
 - Correct benchmarking of building,
 - Building adheres to current industry standards for thermal comfort, outside air ventilation, control of indoor air pollutant and illumination.

Efficiency Programs



Building America (DOE)

GOAL: Develop cost-effective systems for new homes that can produce as much energy as they use – **a net zero energy home**

Through research find energy efficiency solutions for housing:

- Produce homes with 30-90% less energy usage
- Improve productivity
- Reduce construction time and waste
- Provide new product opportunities
- Implement innovative energy/material saving technologies

Efficiency Programs



- Home Performance with Energy Star (HPwES)
- Joint program between US DOE and US EPA
- Existing residential with a holistic approach
- Programs in several states across the country

Example: Osage, Iowa



Energy Efficiency for Economic Development

- Every \$1 spent in Osage generates \$1.90 of economic activity
- Petroleum products ➡ \$1.51
- Utility services ➡ \$1.66
- Energy efficiency ➡ \$2.23
- By doing energy efficiency, Osage was able to attract desirable industries due to reduced energy operating costs

Example: Austin Energy



Energy Efficiency Virtual Power Plant

- “Built” exclusively of energy efficiency materials
 - Enforced energy efficiency building costs
 - Rebates for high efficiency appliances
 - Other programs and policies
- 550 MW in energy savings in about 12 years
- During this time period, Austin’s population doubled & local economy grew by 46%
- Enabled Austin to take a coal-fired power plant off the utility’s planning books.

Example: Austin Energy



- **Power Saver™ Program—Saving Energy Together**

Rebates and low-interest loans to help residential and business customers conserve energy, save money and improve comfort.

- Programs for Commercial Sources to generate additional power, lower long-term investment costs for electric facilities, and to help protect the environment.

- **GreenChoice®** offers electricity from clean, renewable sources.



**Questions & Comments
are
Welcomed**